

## CLAIMS

What is claimed is:

1. A method of reducing the leaching of heavy metal from the surface of a heavy metal bearing material or waste, comprising contacting heavy metal bearing material or waste surface with at least one wet process phosphoric acid, in an amount effective in reducing the leaching of heavy metal from heavy metal bearing material or waste surface to a level no more than RCRA HAZ as determined in an EPA TCLP test, said test performed on the heavy metal bearing material or waste impact area, heavy metal contaminated soils or heavy metal contaminated material receiving the heavy metal bearing material or waste, as set forth in the Federal Register, vol. 55, no. 126, pp. 26985-26998 (June 29, 1990).  
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2. The method of Claim 1, wherein the phosphate is merchant grade phosphoric acid.  
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3. The method of Claim 1, wherein the phosphate is amber phosphoric acid.
4. The method of Claim 1, wherein the phosphate is green phosphoric acid.
5. The method of Claim 1 further comprising a complexing agent.
6. The method of Claim 5, wherein the complexing agent is calcium chloride.

7. The method of Claim 1 further comprising a surfactant.

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8. A method of reducing the leaching of heavy metal from the surface of a heavy metal bearing material or waste, comprising contacting heavy metal bearing material or waste surface with at least one wet process phosphoric acid, in an amount effective in reducing the leaching of lead from lead bearing material or waste surface under natural or induced lead leaching conditions.

9. The method of Claim 8 further comprising a complexing agent.

10. The method of Claim 8 further comprising a surfactant.

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11. A method of reducing the leaching of heavy metal from the surface of a heavy metal bearing material or waste, comprising contacting heavy metal bearing material or waste surface with at least one wet process phosphoric acid in an amount effective in reducing the leaching of heavy metal from heavy metal bearing material or waste surface, to a level of Groundwater, Surface Water or Drinking Water Standards as determined by Simulated Precipitant Leaching Procedure method 1310 or water leach test.

12. The method of Claim 11 further comprising a complexing agent.

13. The method of Claim 11 further comprising a surfactant.

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14. A method of reducing the leaching of heavy metal from heavy metal mining waste ore tailings, comprising contacting heavy metal ore with at least one wet process phosphoric acid, in an amount effective in reducing the leaching of heavy metal from the heavy metal ore to a level no more than RCRA HAZ as determined in an EPA TCLP test, said test performed on the heavy metal ore impact area, heavy metal contaminated soils or heavy metal contaminated material receiving the heavy metal bearing material or waste, as set forth in the Federal Register, vol. 55, no. 126, pp. 26985-26998 (June 29, 1990).

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15. The method of Claim 14, wherein the phosphate is merchant grade phosphoric acid.

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16. The method of Claim 14, wherein the phosphate is amber phosphoric acid.

17. The method of Claim 14, wherein the phosphate is green phosphoric acid.

18. The method of Claim 14 further comprising a complexing agent.

15 19. The method of Claim 18, wherein the complexing agent is calcium chloride.

20. The method of Claim 14 further comprising a surfactant.

21. A method of reducing the leaching of heavy metal from the surface of a heavy metal bearing material or waste, comprising contacting heavy metal bearing material or waste surface with at least one wet process phosphoric acid and

complexing agent, in an amount effective in reducing the leaching of lead from lead bearing material or waste surface under natural or induced lead leaching conditions.

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22. A method of reducing the leaching of heavy metal from heavy metal mining  
5 waste ore tailings, comprising contacting heavy metal ore with at least one wet  
process phosphoric acid, complexing agent and surfactant, in an amount  
effective in reducing the leaching of heavy metal from the heavy metal ore to a  
level no more than RCRA HAZ as determined in an EPA TCLP test, said test  
performed on the heavy metal ore impact area, heavy metal contaminated soils  
10 or heavy metal contaminated material receiving the heavy metal bearing material  
or waste, as set forth in the Federal Register, vol. 55, no. 126, pp. 26985-26998  
(June 29, 1990).